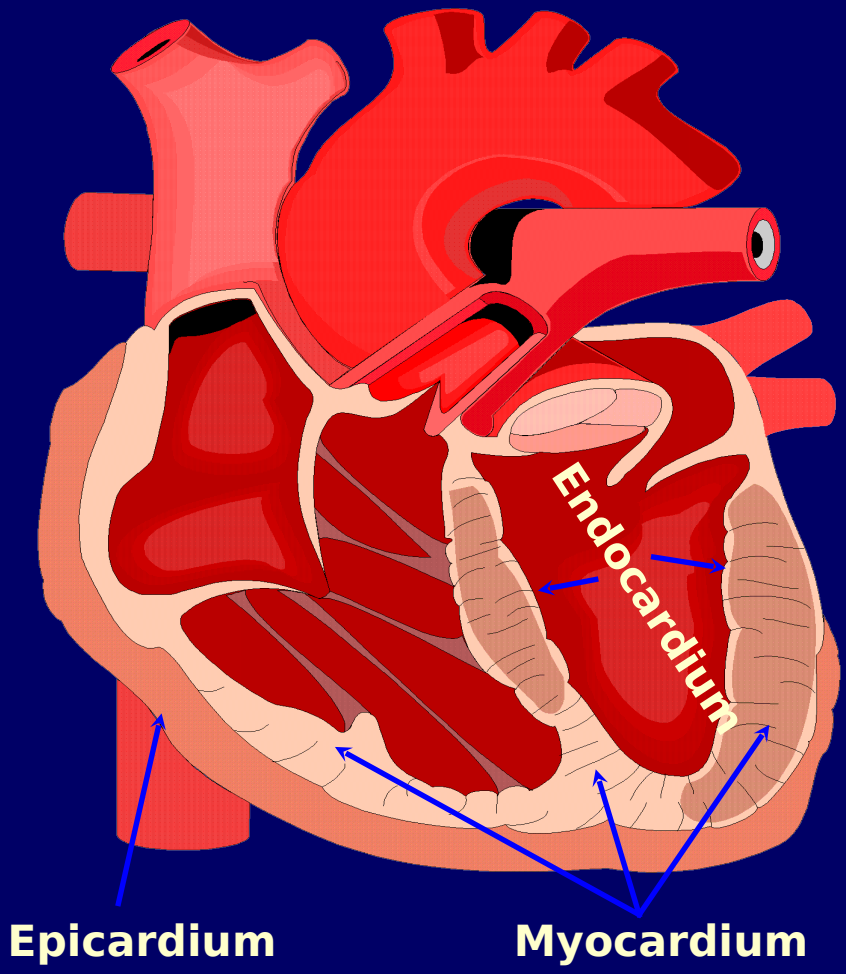
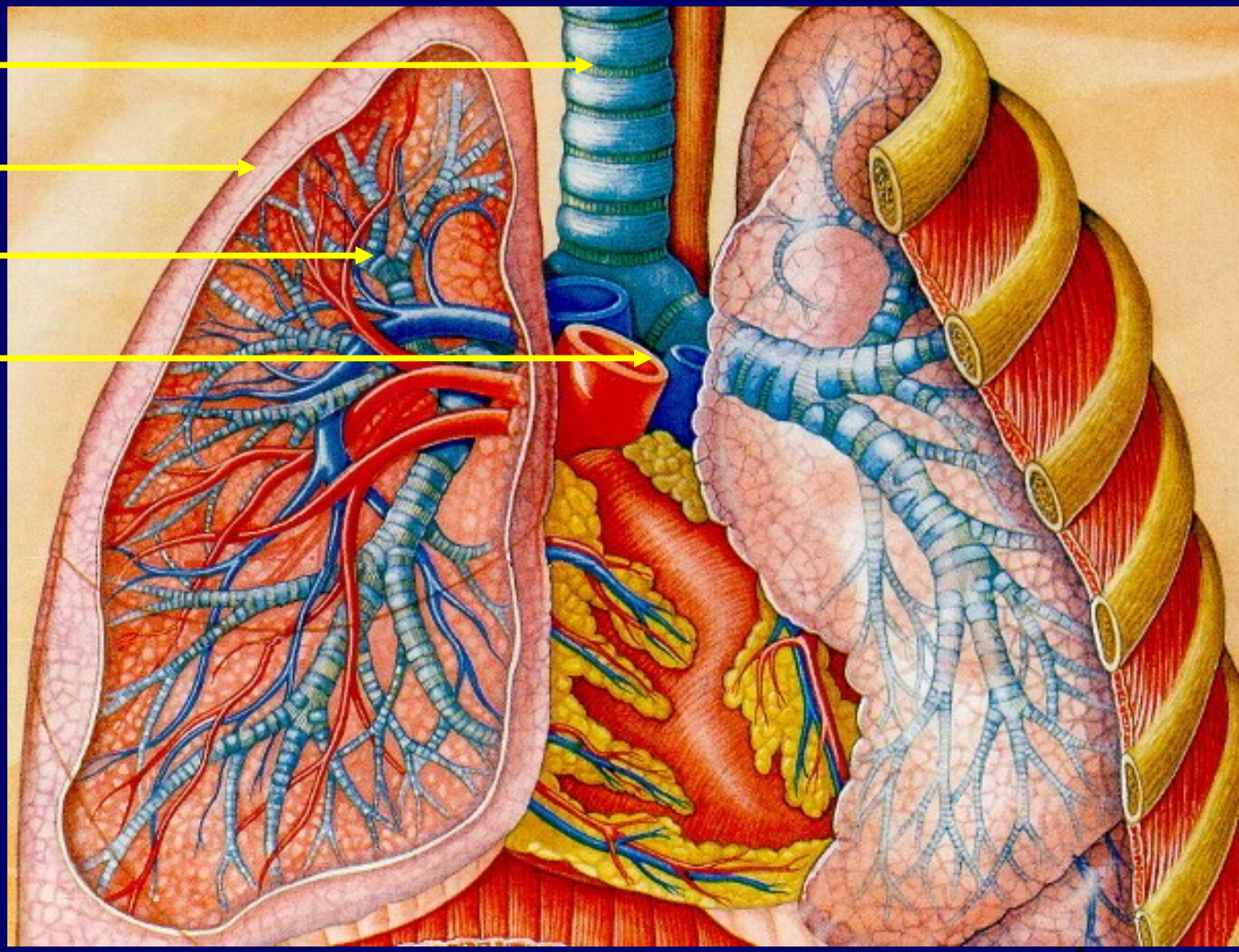
# *Treating Chest Trauma*

# Heart

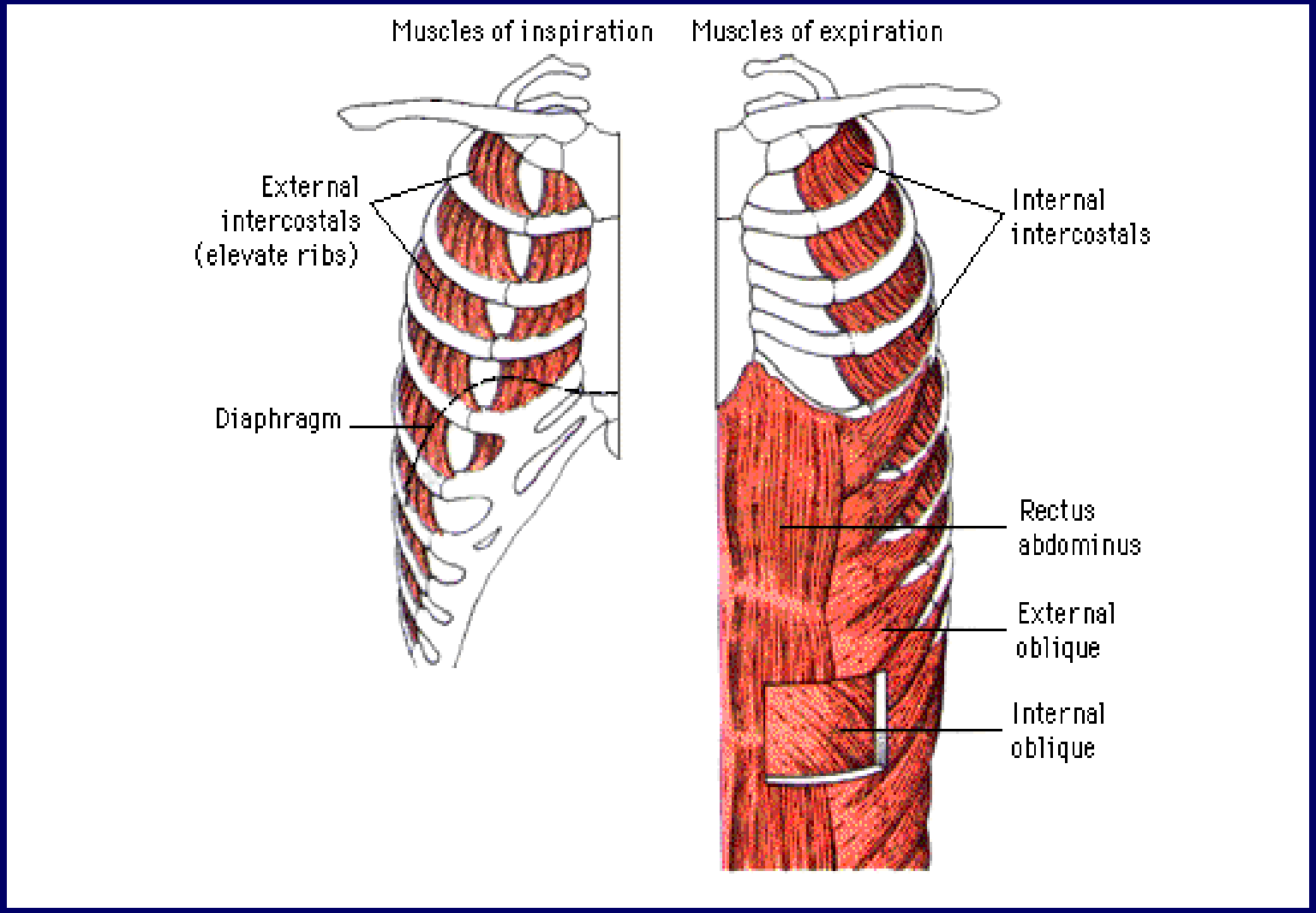


# Anatomy of the Thorax

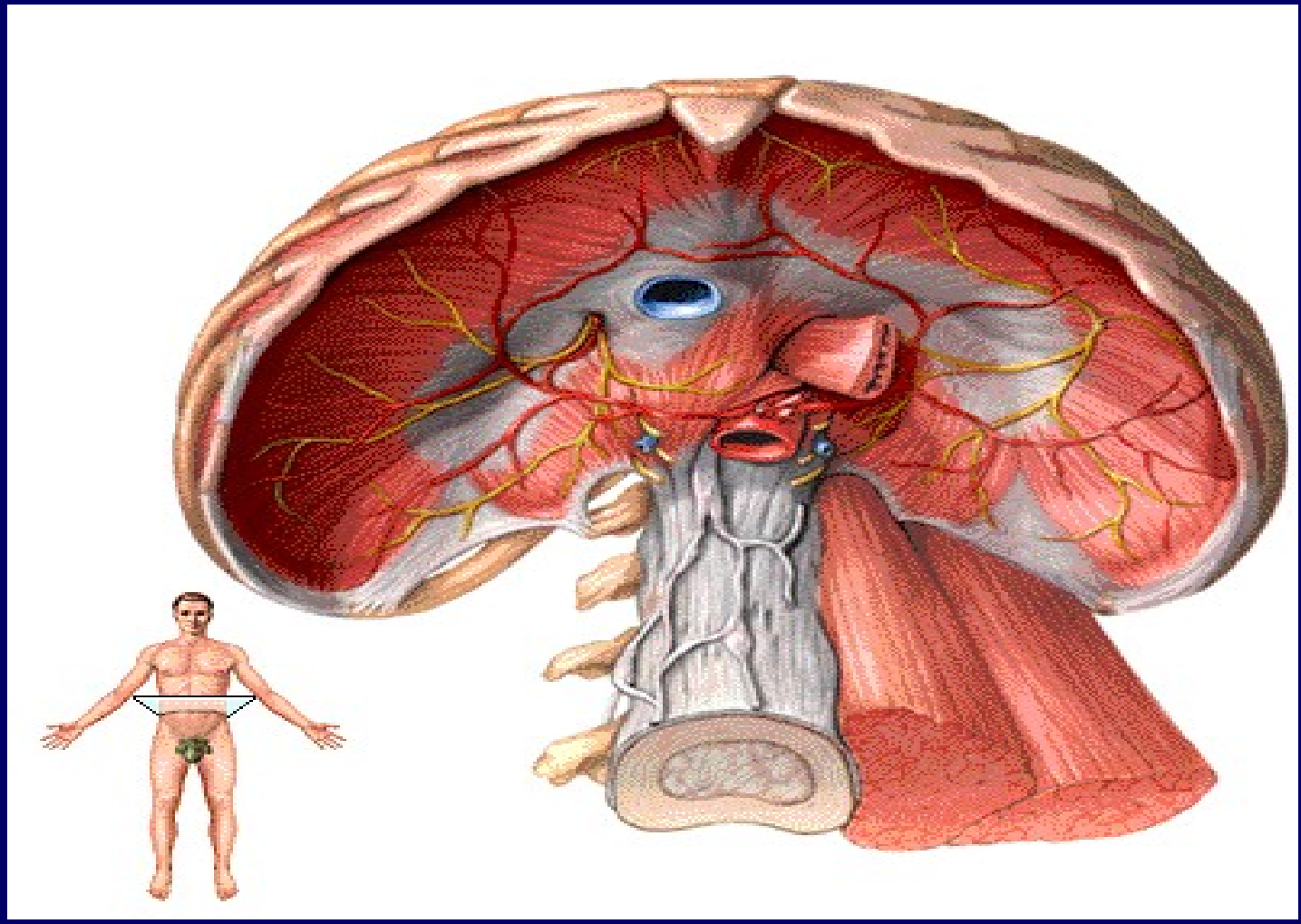
- Trachea
- Lungs
- Bronchi
- Mediastinum



# Muscles of the Thorax



# Diaphragm



# Determine MOI

- Mechanism of injury
  - Penetrating trauma
    - Gunshot, Stabbing, Shrapnel
    - Impaled Objects
    - Much less likely with proper use of IBA
  - Blunt trauma
    - Much more likely on today's battlefield

# Assess the casualty

- Identify signs and symptoms
  - Airway
  - Breathing
  - Circulation
  - Disability (LOC)
  - Expose
  - Full Set of Vital Signs

# Assess the casualty

- Airway
  - Trachea Deviated from Mid-Line (Deviation away from injury)
  - Jugular Vein Distention
  - Presence of pink, frothy sputum
  - Gurgling noises with each breath

# Assess the casualty

- Breathing
  - Labored
  - Too Fast (Tachypnea)
  - Too Slow (Bradypnea)
  - Painful (Sharp or Dull, but increases on inhalation)

# Assess the casualty

- Circulation
  - Cyanosis
  - Pale
  - Pulse Too Fast (Tachycardia)
  - Pulse Too Slow (Bradycardia)
  - Cold Sweat (Diaphoresis)

# Assess the casualty

- Disability (LOC)
  - Confused
  - Anxious
  - Combative
  - Unresponsive or responsive only to Pain

# Assess the casualty

- Expose
  - Bruise (Contusion) (LOOK)
  - Tap Chest (LISTEN)
    - Drum Sound (Hyper-resonant)
    - Dull Thud (Hypo-resonant)
    - Crackling (Subcutaneous Emphysema)
  - Instability (FEEL)
    - Broken ribs

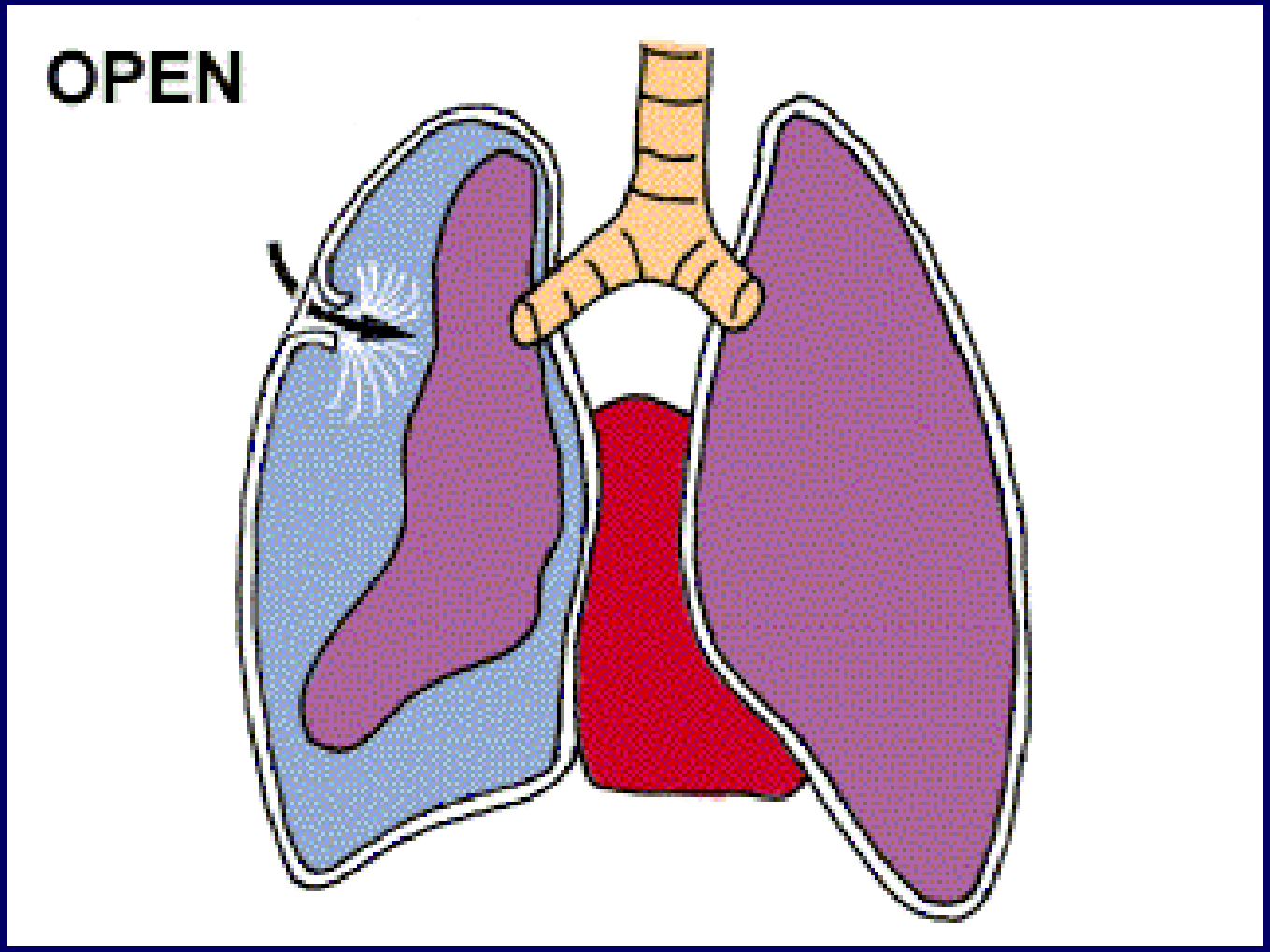
# Assess the casualty

- Full Set of Vitals
  - Weak or Absent Peripheral Pulses
  - Pulse/Respirations Too Fast
  - Pulse/Respirations Too Slow

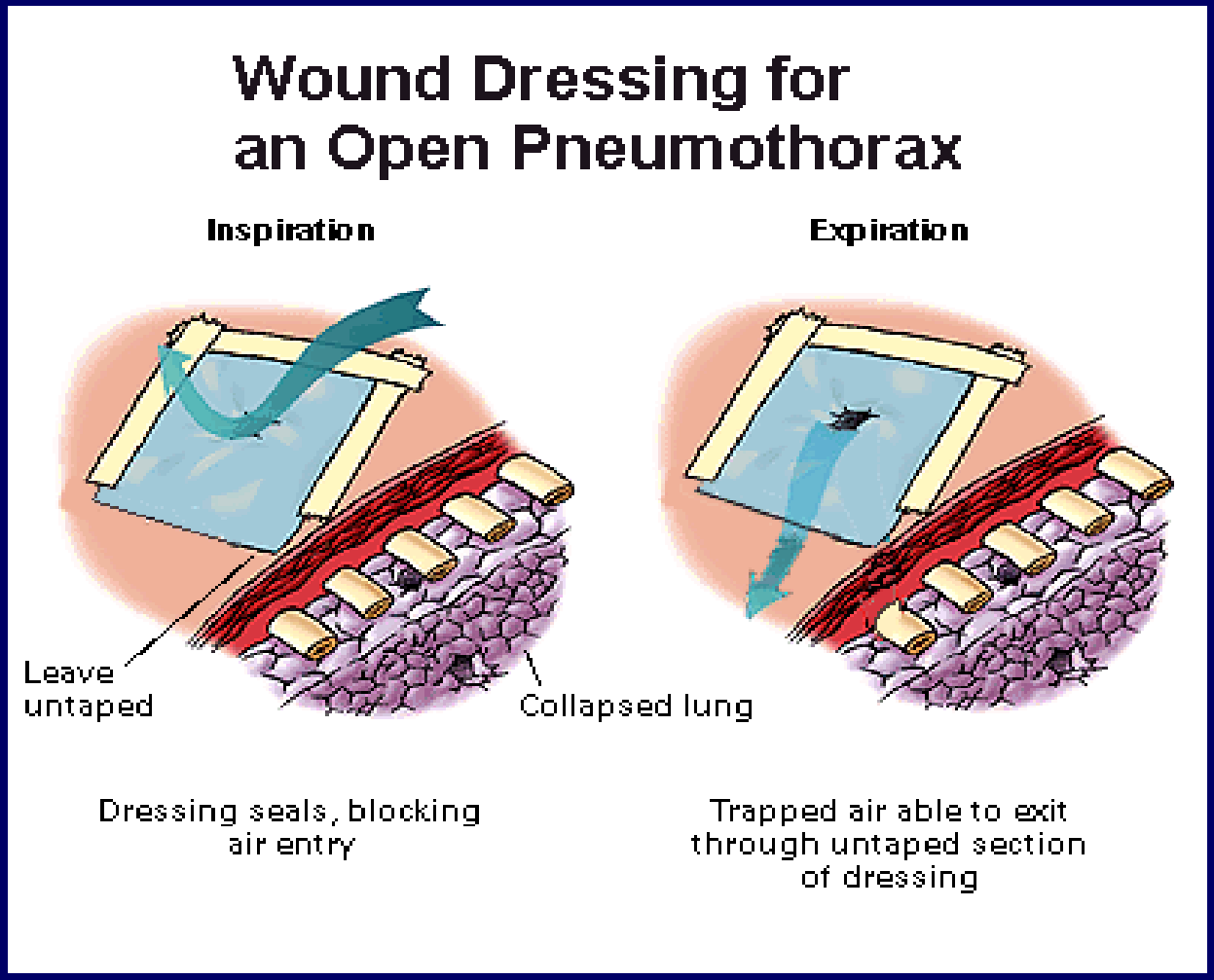
# Pneumothorax (Open)

- Penetrating thoracic injury
- Sucking chest wound
- Management
  - Ensure open airway
  - Occlusive dressing (Asherman Chest Seal)
  - Initiate Saline Lock

# Pneumothorax (Open)



# Pneumothorax (Open)



# Pneumothorax (Open)

**Petroleum Gauze can also be used to seal a sucking chest wound.**

# "Asherman Chest Seal"

# Impalement Injuries

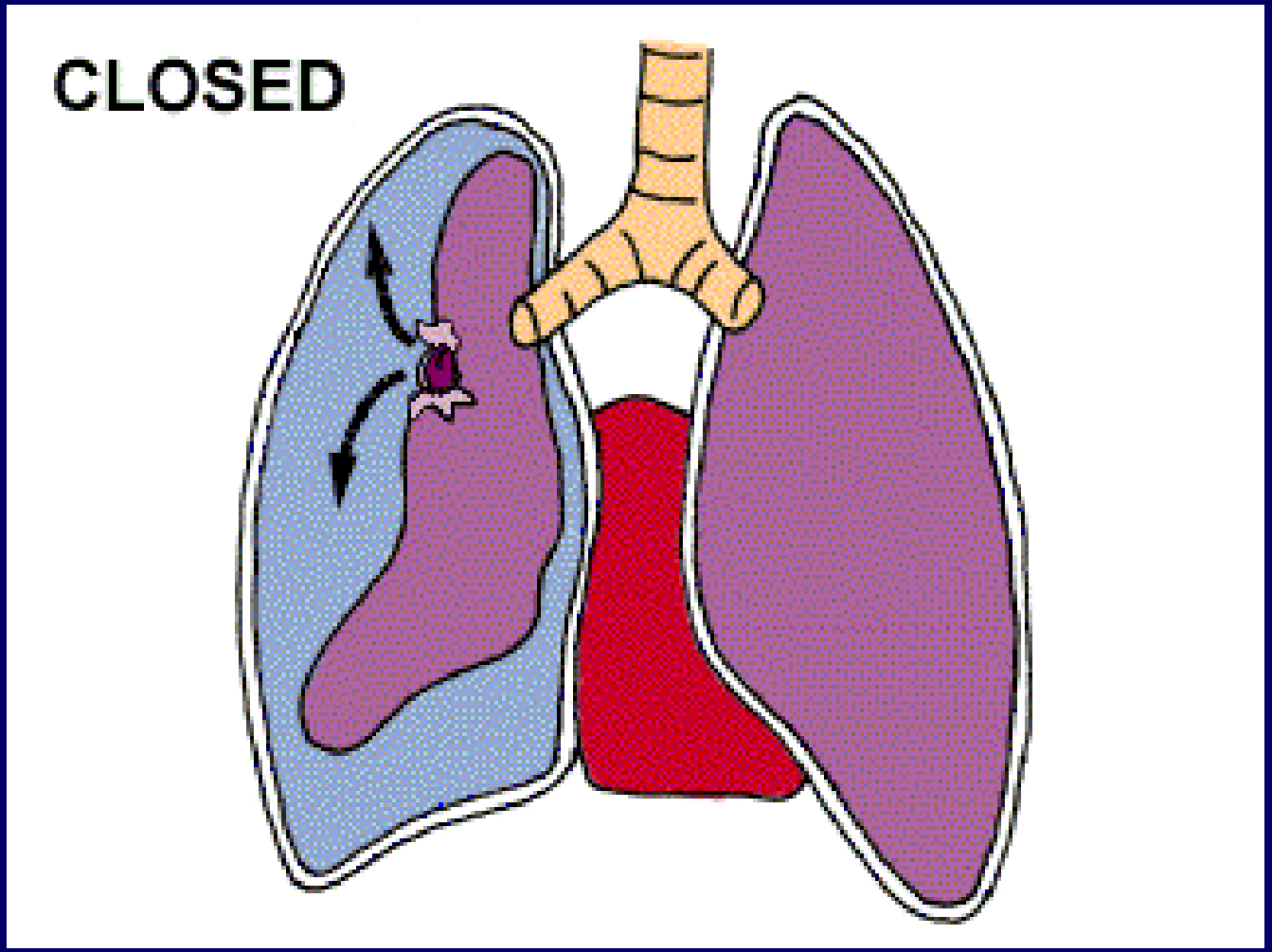
- Caused by penetrating object (s)
- DO NOT remove object
- Management
  - Ensure airway and oxygen 15 lpm
  - Stabilize object
  - Initiate large bore IV and treat for shock
  - Transport to nearest medical facility

# Impaled Object

# Pneumothorax (Closed)

- May be caused by blunt trauma or may be spontaneous
- Overpressurization ( eg. blast, diving)
- What it is : accumulation of air within space between visceral and parietal pleura

# Pneumothorax (Closed)



# Tension Pneumothorax

- One-way valve created from either penetrating or blunt trauma
- Air enters thoracic space but cannot escape, pressure builds and further collapses the lung and forces mediastinum and heart away from effected lung. May also compromise good lung.

# Tension Pneumothorax

- Management
  - Ensure open airway
  - Decompress affected side of chest
  - Initiate Saline Lock
  - Transport to nearest medical facility

# Needle Chest Decompression

- Indications
  - Tension Pneumothorax with any two:
    - Respiratory Distress & Cyanosis
    - Decreasing Level of Consciousness
    - Loss of Radial Pulse (hypovolemia)
- Required Materials
  - 12 to 14 gauge  I.V. needle w/catheter 5 cm long
  - Betadine or Alcohol Prep Pads
  - Surgical Gloves (2 pair)
  - 1/2” Tape
  - Condom or finger from glove

# Needle Chest Decompression

Review anatomy of the chest and identify the following anatomical landmarks on the side of the tension pneumothorax

- **Mid-clavicular line**
- **Second intercostal space - superior edge of the 3rd rib**

# Needle Chest Decompression

- Steps for performing the procedure
  - Position of Casualty: this procedure is not dependant on any single position that the casualty may be in or able to be moved to. Casualty may be lying flat, sitting etc.

# Needle Chest Decompression

Site preparation: accomplished using either alcohol and or betadine prep pads to disinfect the skin

- Using your index finger trace the mid-clavicular line, then identify the second intercostal space (between the second and third ribs) on the side of the tension pneumothorax

# Needle Chest Decompression

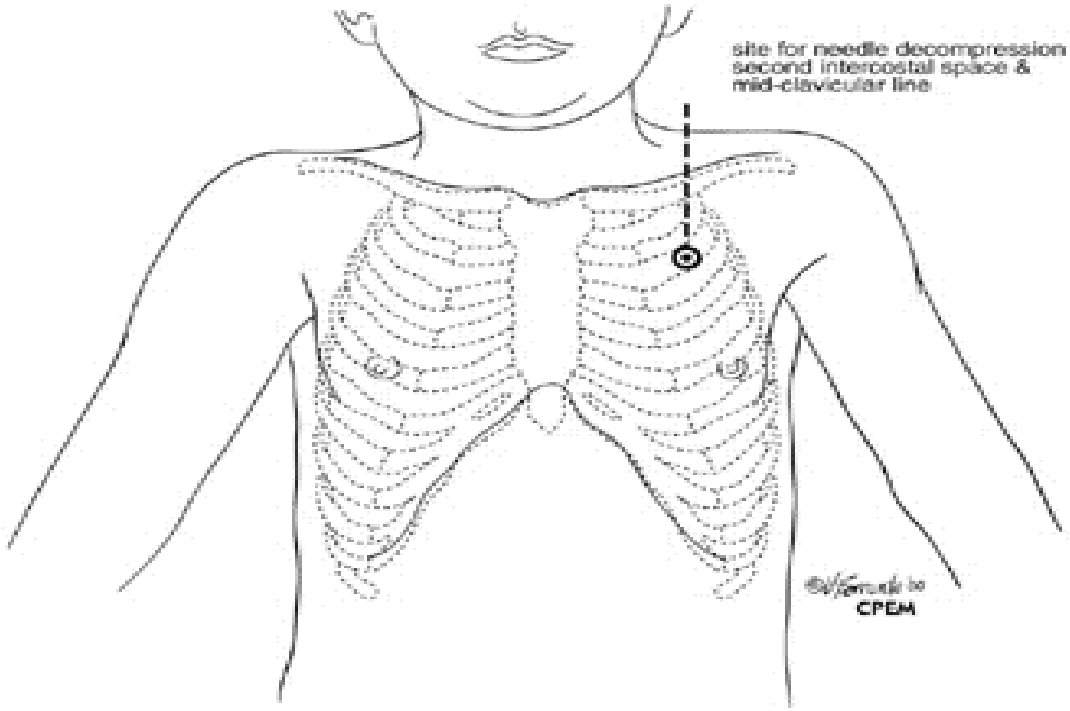



Fig 6 anatomy with needle in place for needle decompression (ALSTRIPP)

# Needle Chest Decompression

- Steps for performing the procedure
  - Insert the needle perpendicular to the chest wall, directly over the top of the third rib until a palpable pop is felt followed immediately by a hissing of air escaping from the chest cavity
  - A rush of air confirms the diagnosis and rapidly improves the patient's condition

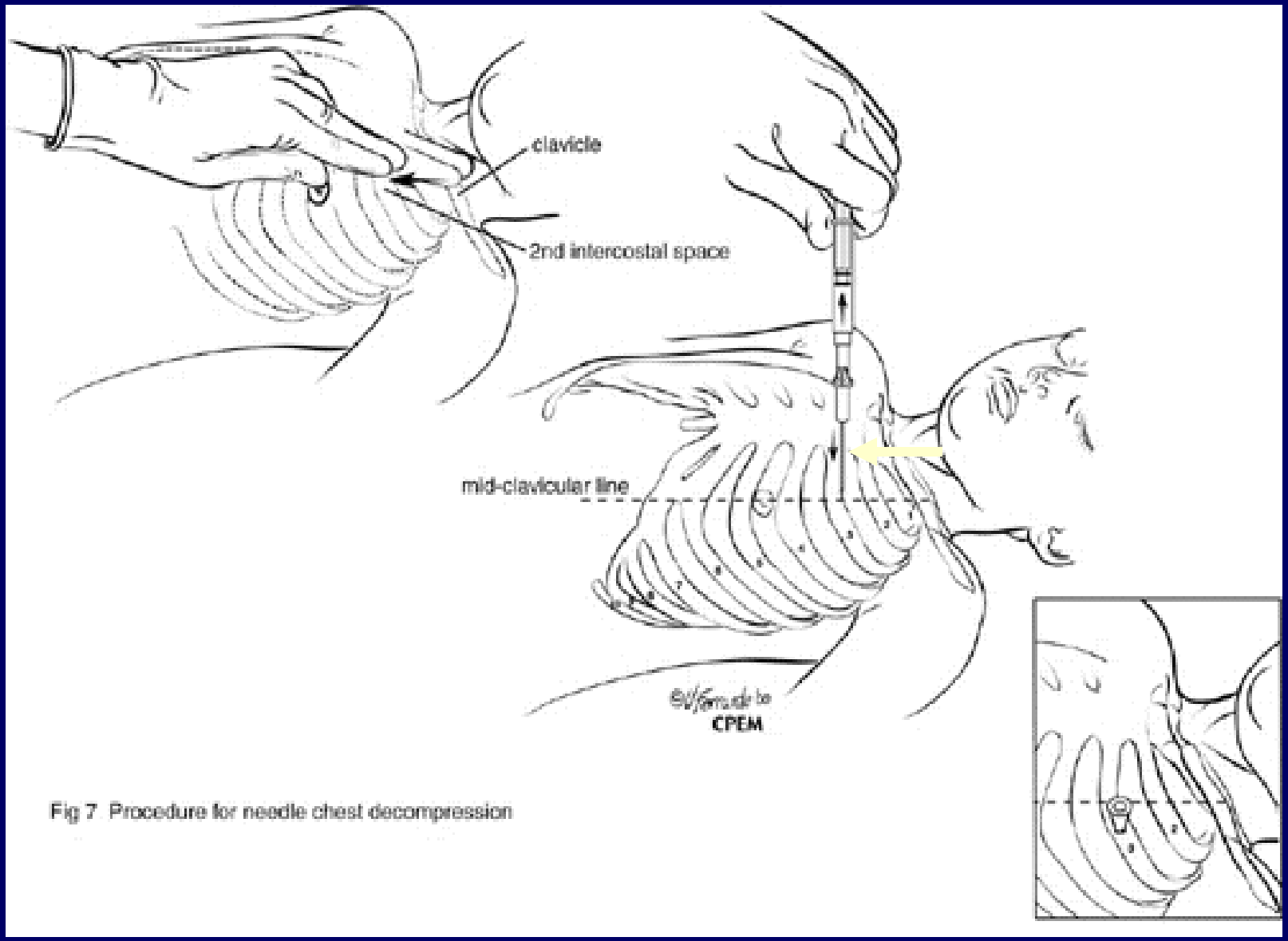
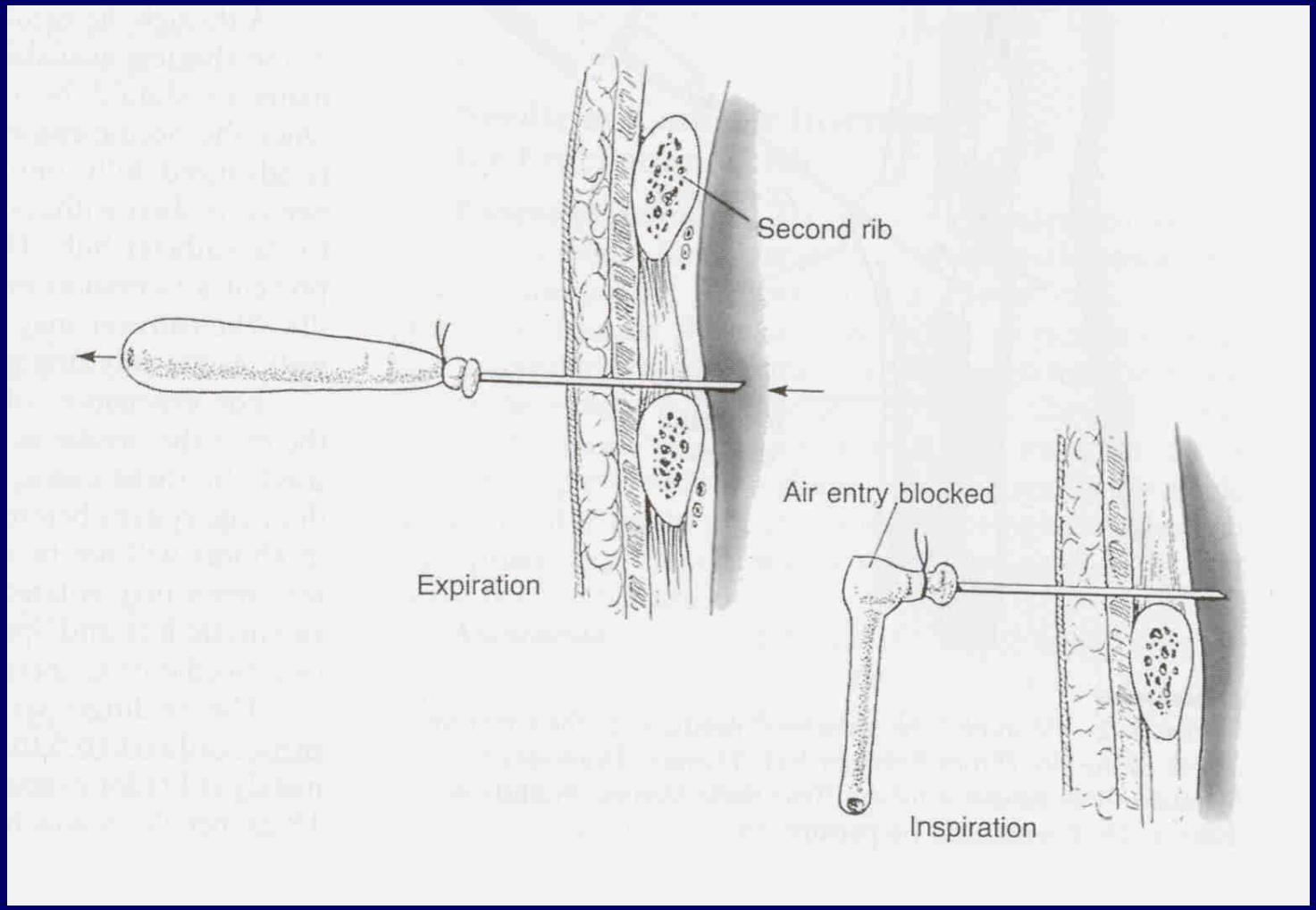



Fig 7 Procedure for needle chest decompression

# Needle Chest Decompression



# Needle Chest Decompression

# Complications

- Laceration of the intercostal vessels or nerve may cause hemorrhage or nerve damage
- Creation of a pneumothorax may occur if not already present
- Infection is a possibility

# Questions

# Summary

- In multiple trauma patients chest injuries are common and may be life threatening. You as the soldier medic must have the ability to identify chest injuries and know the treatment modalities available to you. Your prompt action may be life-saving.